

## 6202.0 - Labour Force, Australia, Jul 2009

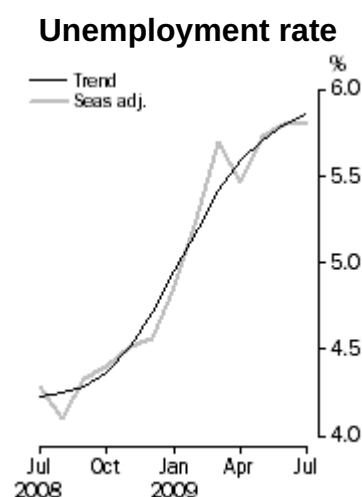
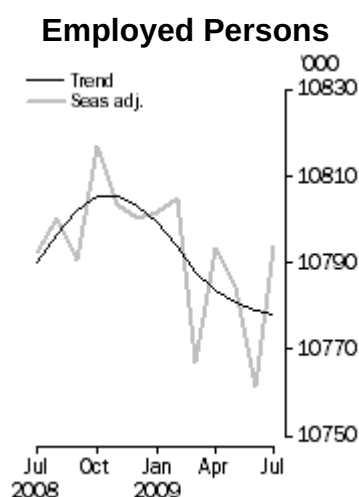
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## Summary

### Main Features

#### JULY KEY FIGURES

	Jun 2009	Jul 2009	Jun 09 to Jul 09	Jul 08 to Jul 09
<b>Trend</b>				
Employed persons ('000)	10 779.1	10 778.3	-0.8	-0.1%
Unemployed persons ('000)	664.1	670.5	6.4	40.6%
Unemployment rate (%)	5.8	5.9	0.1pts	1.6pts
Participation rate (%)	65.4	65.3	0.0pts	-0.1pts
<b>Seasonally Adjusted</b>				
Employed persons ('000)	10 761.4	10 793.6	32.2	0.0%
Unemployed persons ('000)	663.2	664.1	0.8	37.3%
Unemployment rate (%)	5.8	5.8	0.0pts	1.5pts
Participation rate (%)	65.3	65.3	0.1pts	-0.1pts



#### JULY KEY POINTS

#### TREND ESTIMATES (MONTHLY CHANGE)

- EMPLOYMENT decreased to 10,778,300
- UNEMPLOYMENT increased to 670,500
- UNEMPLOYMENT RATE increased to 5.9%

- PARTICIPATION RATE decreased to 65.3%

## SEASONALLY ADJUSTED ESTIMATES (MONTHLY CHANGE)

### EMPLOYMENT

- increased by 32,200 to 10,793,600. Full-time employment decreased by 16,000 to 7,590,400 and part-time employment increased by 48,200 to 3,203,200.

### UNEMPLOYMENT

- increased by 800 to 664,100. The number of persons looking for full-time work decreased by 4,800 to 495,900 and the number of persons looking for part-time work increased by 5,600 to 168,200.

### UNEMPLOYMENT RATE

- remained steady at 5.8%. The male unemployment rate increased 0.1 percentage point to 6.2%, and the female unemployment rate decreased 0.1 percentage point to 5.3%.

### PARTICIPATION RATE

- increased 0.1 percentage point to 65.3%.

## NOTES

### FORTHCOMING ISSUES

ISSUE	Release Date
August 2009	10 September 2009
September 2009	8 October 2009
October 2009	12 November 2009
November 2009	10 December 2009
December 2009	14 January 2010
January 2010	11 February 2010

### INTRODUCTION OF NEW KEY MEASURES

The ABS will be introducing two new key measures into **Labour Force, Australia** (cat. no. 6202.0) from the August 2009 issue, namely, a monthly measure: **aggregate monthly hours worked**, and a quarterly measure: **labour force underutilisation rate**. Refer to the article titled **Aggregate monthly hours worked** in this issue for further details on the hours worked measure and the May 2009 issue of this publication for details on the labour force

underutilisation rate measure.

## **SAMPLE RE-INSTATEMENT**

On 13 May 2009, the Australian Statistician announced the full re-instatement of the Labour Force Survey sample. The re-instatement will occur over four reference months, from September to December 2009. The December 2009 estimates, released in January 2010, will be the first under the fully re-instated sample. The reversal of the 24% reduction in sample size is expected to decrease standard errors by approximately 15%.

## **ROUNDING**

Estimates of monthly change and graphs shown on the front cover have been calculated using unrounded estimates, and may be different from, but are more accurate than, movements obtained from rounded estimates.

## **SAMPLING ERRORS**

The estimates in this publication are based on a sample survey, therefore, published estimates and the movements derived from them are subject to sampling variability. Standard errors give a measure of this variability, see pages 31 and 32.

The interval bounded by the two limits is the 95% confidence interval, which provides another way of looking at the variability inherent in estimates. This represents a 95% chance that the true value of the estimate lies within that interval.

### **Movements in seasonally adjusted series between June 2009 and July 2009**

	<b>Monthly change</b>	<b>95% Confidence interval</b>		
Total Employment	32 200	-28 400	to	92 800
Total Unemployment	800	-36 200	to	37 800
Unemployment rate	0.0 pts	-0.4 pts	to	0.4 pts
Participation rate	0.1 pts	-0.3 pts	to	0.5 pts

## **INQUIRIES**

For further information about these and related statistics, contact the National Information and Referral Service on 1300 135 070, email [client.services@abs.gov.au](mailto:client.services@abs.gov.au) or Mary Piechowski on Canberra (02) 6252 6525, email [<labourforce@abs.gov.au>](mailto:labourforce@abs.gov.au).

# **Aggregate monthly hours worked**

## **AGGREGATE MONTHLY HOURS WORKED**

## INTRODUCTION

The recent economic downturn has resulted in an increased focus on Australia's labour market, and in particular on changes in unemployment, employment and the relationship to hours worked. While much of the recent interest has been on movements in the unemployment rate, there is considerable value in analysing other indicators, such as underemployment and hours worked, to better understand the impacts on the labour market.

The ABS produces seasonally adjusted and trend estimates for employment and unemployment, which enable the analysis of month-to-month movements. However, estimates of hours worked have only been produced as original estimates, which limits their usefulness in monitoring movements in hours worked.

In response to the increasing demand for hours worked estimates on a seasonally adjusted and trend basis, the ABS has developed a new measure of hours worked, namely **aggregate monthly hours worked**, which in future will be available in both seasonally adjusted and trend terms. This new measure of hours worked will complement the existing information on employment and unemployment, assisting analysts in understanding how the labour market is responding to economic challenges, for example, whether employers are reducing employee hours rather than retrenching employees in an attempt to reduce costs.

This article introduces the new aggregate monthly hours worked estimates. These estimates will be included in **Labour Force, Australia** (cat. no. 6202.0) from the August 2009 reference period onwards (to be released on 10 September 2009).

## HOURS WORKED

### Current measures

The ABS currently publishes estimates of actual (and usual) hours worked monthly in **Labour Force, Australia, Detailed - Electronic Delivery** (cat. no. 6291.0.55.001) and quarterly in **Labour Force, Australia, Detailed - Electronic Quarterly** (cat. no. 6291.0.55.003). Estimates of actual hours worked are produced as original time series and relate to hours worked in the survey reference week, that is, at a point in time.

### Aggregate monthly hours worked

To complement the existing weekly actual hours worked original estimates, the ABS has developed estimates of aggregate monthly hours worked, available as seasonally adjusted and trend estimates. This measures the total number of hours worked by employed persons in a calendar month. The methodology used to produce aggregate monthly hours worked means that these are synthetic estimates. Seasonally adjusted and trend estimates of aggregate monthly hours worked are available for the period July 1985 onwards.

Seasonally adjusted aggregate monthly hours worked estimates are produced by combining two series.

The first series is an annual benchmark series containing original estimates of actual hours worked in each financial year from 1985-86 onwards. The annual actual hours worked original estimates are calculated by determining the actual hours worked for each week of the financial year. As actual hours worked are only collected in respect of the reference week of the Labour Force Survey, actual hours worked for weeks not covered by the Labour Force Survey are imputed based on the actual hours worked for the reference weeks in the

adjacent months. The imputation accounts for the effect of public holidays on hours worked, that is it accounts for holidays that occur in the reference week of the survey, as well as holidays that occur in weeks other than the reference week of the Labour Force Survey.

The second series is the seasonally adjusted actual hours worked in the reference week, including holiday correction. These estimates provide an indication of movements across months.

These two series are then combined to produce the seasonally adjusted aggregate monthly hours worked series. A trend series is also then produced. This approach ensures that:

- the level of the aggregate monthly hours worked series is consistent with the level of the annual benchmarks, and
- the movements in the series are consistent with the movements in the seasonally adjusted actual hours worked in the reference week series.

## INFORMATION PAPER

An information paper providing further information on the methodology used to produce the aggregate monthly hours worked estimates is expected to be released on 8 September 2009. This information paper will also include the results of investigations into the feasibility of producing additional aggregate monthly hours worked series, for example for males and females, as well as ABS plans for publishing estimates of the total number of hours worked on a quarterly and annual basis.

## AGGREGATE MONTHLY HOURS WORKED FOR JULY 2009

In trend terms, the aggregate monthly hours worked by employed people in Australia in July 2009 was 1.52 billion hours (see Table 1). This represents a decrease of 1.5 million hours (or -0.1%) from June 2009 and a decrease of 35.1 million hours (or -2.3%) from July 2008. In seasonally adjusted terms, there was a decrease of 0.4% from June 2009 and a decrease of 2.9% from July 2008.

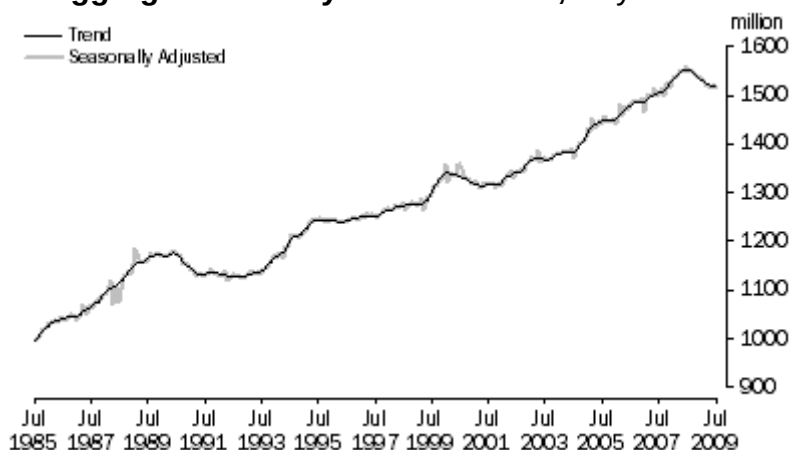
### Aggregate monthly hours worked

	Trend		Seasonally adjusted	
	Level million	Monthly movement %	Level million	Monthly movement %
July 2006	1 480.2	0.24	1 483.1	0.82
July 2007	1 506.4	0.09	1 503.2	0.27
2008				
July	1 551.9	-	1 560.9	0.79
August	1 550.6	-0.09	1 546.0	-0.96
September	1 548.1	-0.16	1 548.6	0.17
October	1 544.6	-0.23	1 543.6	-0.32
November	1 540.6	-0.26	1 542.3	-0.08
December	1 536.2	-0.29	1 534.1	-0.53
2009				
January	1 532.0	-0.27	1 535.2	0.08
February	1 528.2	-0.25	1 527.1	-0.53
March	1 524.9	-0.22	1 520.6	-0.43
April	1 522.3	-0.17	1 525.4	0.32
May	1 520.1	-0.14	1 517.4	-0.53
June	1 518.3	-0.12	1 521.8	0.29

- nil or rounded to zero (including null cells)

As shown in Figure 1, aggregate monthly hours worked peaked in June 2008 (1.55 billion hours), and has been steadily declining since then. Over the last 24 years, aggregate monthly hours worked has generally trended upwards, with the notable exceptions observed in 1990-92, 2000-01 and 2008-09.

**Figure 1. Aggregate monthly hours worked, July 1985 to July 2009**

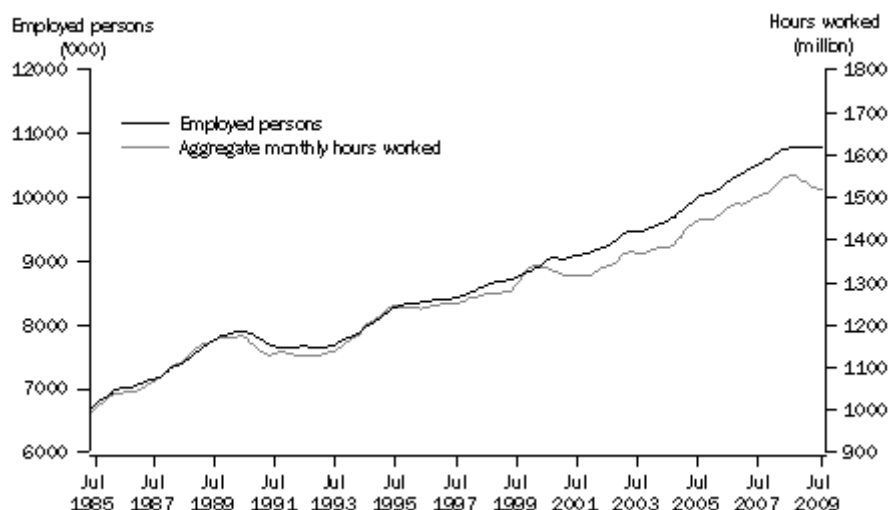


Historically, the decreases in aggregate monthly hours worked have generally coincided with decreases in the employment series (see Figure 2). During the economic downturn that occurred in 1990-92, aggregate monthly hours worked and employment decreased at approximately the same time. However, the recent decrease in aggregate monthly hours worked has been larger (as a percentage) and occurred earlier than the decrease in the employment series.

In 2000-01, the aggregate monthly hours worked series also exhibited an earlier and larger decrease than the employment series. However, this decrease in aggregate monthly hours worked not only reflects a weakening of the labour market in 2000-01, but also the effect of the 2000 Sydney Olympic Games, which had a noticeable impact on aggregate monthly hours worked (they increased prior to the Olympics and then subsequently decreased).

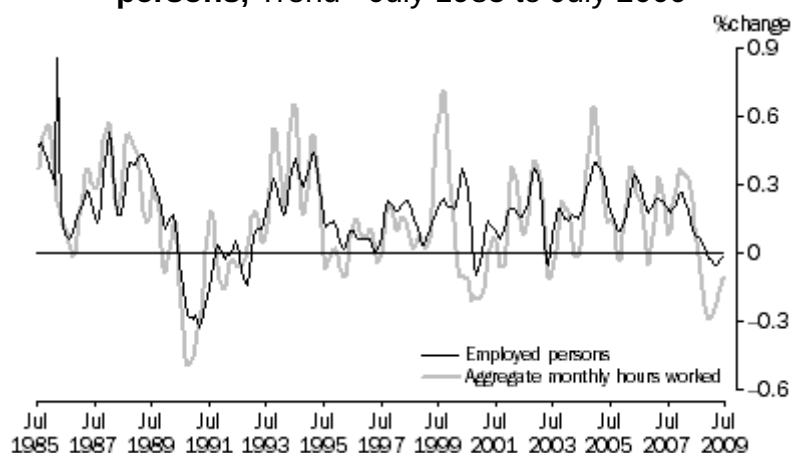
The trend series of aggregate monthly hours worked decreased 35.2 million hours (or -2.3%) between the series high in June 2008 and July 2009. In comparison, trend employment peaked five months later in November 2008, and decreased 0.3% to July 2009.

**Figure 2. Aggregate monthly hours worked and employed persons, Trend - July 1985 to July 2009**



An analysis of the monthly percentage movements for both the trend aggregate monthly hours worked series and the trend employment series (see Figure 3) shows the similar behaviour of the two series, although aggregate monthly hours worked shows more variability. This suggests that employers adjust in the short term to economic fluctuations by altering hours worked as well as taking on additional staff in economic upturns or reducing staff in downturns. Figure 3 also highlights that the recent decrease in aggregate monthly hours worked has been more pronounced than the decrease in employment.

**Figure 3. Percentage change in aggregate monthly hours worked and employed persons, Trend - July 1985 to July 2009**



## FURTHER INFORMATION

For further information on this article, data supporting the article or the methodology used to construct these estimates, please contact Michael Johnson on (02) 6252 5225 or email [michael.johnson@abs.gov.au](mailto:michael.johnson@abs.gov.au).

For more details on the hours concepts collected in the Labour Force Survey and other labour collections, refer to **Labour Statistics: Concepts, Sources and Methods** (cat. no. 6102.0.55.001).

# About this Release

Summary results of the monthly Labour Force Survey containing estimates of employed and unemployed persons classified by sex, full-time/part-time status, states and territories and some age groups; and persons not in the labour force.

## Explanatory Notes

### Explanatory Notes

#### EXPLANATORY NOTES

##### INTRODUCTION

**1** This publication contains estimates of the civilian labour force derived from the Labour Force Survey component of the Monthly Population Survey. The full time series for estimates from this publication are also available electronically. More detailed estimates are released one week after this publication in various electronic formats - see **Labour Force, Australia, Detailed - Electronic Delivery** (cat. no. 6291.0.55.001) and **Labour Force, Australia, Detailed, Quarterly** (cat. no. 6291.0.55.003).

##### CONCEPTS, SOURCES AND METHODS

**2** The conceptual framework used in Australia's Labour Force Survey aligns closely with the standards and guidelines set out in Resolutions of International Conferences of Labour Statisticians. Descriptions of the underlying concepts and structure of Australia's labour force statistics, and the sources and methods used in compiling the estimates, are presented in **Labour Statistics: Concepts, Sources and Methods** (cat. no. 6102.0.55.001) which is available on the ABS website <<https://www.abs.gov.au>> .

##### LABOUR FORCE SURVEY

**3** The Labour Force Survey is based on a multi-stage area sample of private dwellings (currently about 22,800 houses, flats, etc.) and a list sample of non-private dwellings (hotels, motels, etc.), and covers about 0.24% of the population of Australia. Information is obtained from the occupants of selected dwellings by specially trained interviewers.

**4** The information is collected using computer-assisted interviewing (CAI), whereby responses are recorded directly onto an electronic questionnaire on a notebook computer. The CAI method was progressively implemented from October 2003 to August 2004, replacing the 'pen and paper' method previously used.

**5** Households selected for the Labour Force Survey are interviewed each month for eight months, with one-eighth of the sample being replaced each month. The first interview is conducted face-to-face. Subsequent interviews are conducted by telephone (if acceptable to the respondent).



**6** The interviews are generally conducted during the two weeks beginning on the Sunday between the 5th and 11th of each month. The information obtained relates to the week before the interview (i.e. the reference week). Each year, to deal with operational difficulties involved with collecting and processing the Labour Force Survey around the Christmas and New Year holiday period, interviews for December start four weeks after November interviews start, and January interviews start five weeks after December interviews start. As a result, January interviewing may commence as early as the 7th or as late as the 13th, depending on the year. Occasionally, circumstances that present significant operational difficulties for survey collection can result in a change to the normal pattern for the start of interviewing.

**7** Estimates from the Labour Force Survey are published first in this publication 32 days after the commencement of interviews for that month, with the exception of estimates for each December which are published 39 days after the commencement of interviews.

## SCOPE OF SURVEY

**8** The Labour Force Survey includes all persons aged 15 years and over except members of the permanent defence forces, certain diplomatic personnel of overseas governments customarily excluded from census and estimated population counts, overseas residents in Australia, and members of non-Australian defence forces (and their dependants) stationed in Australia.

## COVERAGE

**9** In the Labour Force Survey, coverage rules are applied which aim to ensure that each person is associated with only one dwelling, and hence has only one chance of selection. The coverage rules are necessarily a balance between theoretical and operational considerations. Nevertheless, the chance of a person being enumerated at two separate dwellings in the survey is considered to be negligible.

## POPULATION BENCHMARKS

**10** Labour Force Survey estimates are calculated in such a way as to add up to independent estimates of the civilian population aged 15 years and over (population benchmarks). These population benchmarks are projections of the most recently released quarterly Estimated Resident Population (ERP) data. For information on the methodology used to produce the ERP see **Australian Demographic Statistics** (cat. no. 3101.0). To create the population benchmarks for the Labour Force Survey, the most recently released quarterly ERP estimates are projected forward one quarter past the period for which they are required. The projection is based on the historical pattern of each population component - births, deaths, interstate migration and net overseas migration (NOM). By projecting one quarter past that needed for the current population benchmarks, demographic changes are smoothed in, thereby making them less noticeable in the population benchmarks.

**11** The ERP series are revised annually in the September quarter issue of **Australian Demographic Statistics** (cat. no. 3101.0), released in March each year, to incorporate more up to date information available for the population components. The revised ERP estimates are used to update the quarterly population projections used in creating the Labour Force Survey population benchmarks. Benchmarks already used in producing Labour Force Survey estimates are not updated. A process of smoothing is used in the creation of population benchmarks to reduce the effect of these annual revisions to ERP

estimates on the Labour Force Survey population benchmarks.

**12** Every five years the ERP series are revised to incorporate additional information available from the latest Census of Population and Housing. Following the incorporation of Census information, the ERP series prior to the latest Census are final and subject to no further revision. Labour Force Survey population benchmarks, and the estimates, are revised following this 5-yearly revision in the ERP. From the February 2009 issue of this publication, labour force estimates have been compiled using population benchmarks based on the results of the 2006 Census of Population and Housing. Revisions were made in the February 2009 issue to historical labour force estimates from June 2001 to January 2009.

## ESTIMATION METHOD

**13** The estimation method used in the Labour Force Survey is Composite Estimation, which was introduced in May 2007. Composite Estimation combines data collected in the previous six months with current month's data to produce the current month's estimates, thereby exploiting the high correlation between overlapping samples across months in the Labour Force Survey. The Composite Estimator combines the previous and current months' data by applying different factors according to length of time in the survey. After these factors are applied, the seven months of data are weighted to align with current month population benchmarks. For details see **Information Paper: Forthcoming Changes to Labour Force Statistics, 2007** (cat. no. 6292.0).

## COMPARABILITY OF SERIES

**14** From April 1986, the definition of employed persons was changed to include persons who worked without pay between 1 and 14 hours per week in a family business or on a farm (i.e. contributing family workers). For further information, see paragraphs 22 and 23 of the Explanatory Notes in the February 2003 issue of **Labour Force, Australia** (cat. no. 6203.0).

**15** The ABS introduced telephone interviewing into the Labour Force Survey in August 1996. Implementation was phased in for each new sample group from August 1996 to February 1997. During the period of implementation, the new method produced different estimates than would have been obtained under the old methodology. The effect dissipated over the final months of implementation and was no longer discernible from February 1997. The estimates for February 1997 and onwards are directly comparable to estimates for periods prior to August 1996. For further details, see the feature article in the June 1997 issue of **Labour Force, Australia** (cat. no. 6203.0).

**16** From April 2001 the Labour Force Survey has been conducted using a redesigned questionnaire containing additional data items and some minor definitional changes. The definition of unemployed persons was changed to include all persons who were waiting to start work and were available to start in the reference week. This change was introduced in February 2004, when historical unit record data were revised from April 2001 to January 2004. This revision created a small trend break at April 2001 in unemployed persons and unemployment rate series. For further details, see **Information Paper: Forthcoming Changes to Labour Force Statistics** (cat. no. 6292.0), released in December 2003.

**17** Core labour force series were revised in April 2001 for the period April 1986 to March 2001 for the remaining definitional changes introduced with the redesigned questionnaire, to reduce the impact of the changes on labour force series. For further details, see **Information Paper: Implementing the Redesigned Labour Force Survey Questionnaire** (cat. no. 6295.0) and **Information Paper: Questionnaires Used in the Labour Force**

**Survey** (cat. no. 6232.0).

**18** In May 2007, an improved method of estimation, known as composite estimation, was introduced into the Labour Force Survey. In introducing this change the ABS revised unit record data from April 2001 to April 2007 based on the new estimation method. While estimates for periods prior to April 2001 are unrevised and were compiled using a different estimation method, no trend break was identified in the employed persons series. Also, no change was identified in the trend breaks in the unemployed persons and unemployment rate series which arose with the introduction of a redesigned survey form in April 2001 (as noted above in paragraph 16). For further details, see **Information Paper: Forthcoming Changes to Labour Force Statistics, 2007** ( cat. no. 6292.0), released on 21 May 2007.

## **SURVEY SAMPLE REDESIGN**

**19** The Labour Force Survey sample has been reselected using information collected in the 2006 Census of Population and Housing.

**20** The bulk of the new sample was phased in over the period November 2007 to June 2008, with one-eighth of this portion of the sample being introduced every month. The remainder of the sample (about 20% of the total), which covers less settled areas of Australia and non-private dwellings was rotated in full for New South Wales, Western Australia, Northern Territory and Australian Capital Territory in March 2008, and for Victoria, Queensland, South Australia and Tasmania in April 2008. Such a pattern of implementation means that any changes to labour force estimates due to differences between the two samples, or any other influences, were spread over the eight months.

**21** For further details, see **Information Paper: Labour Force Survey Sample Design** (cat. no. 6269.0), released on 28 November 2007.

## **RELIABILITY OF ESTIMATES**

**22** Two types of error are possible in an estimate based on a sample survey: sampling error and non-sampling error.

**23** Sampling error occurs because a sample, rather than the entire population, is surveyed. One measure of the likely difference resulting from not including all dwellings in the survey is given by the standard error. There are about two chances in three that a sample estimate will differ by less than one standard error from the figure that would have been obtained if all dwellings had been included in the survey, and about nineteen chances in twenty that the difference will be less than two standard errors. Standard errors of key estimates for the latest month and of movements since the previous month of these estimates are shown in the standard errors section of this publication. Standard errors for other estimates and other movements may be calculated by using the spreadsheet contained in **Labour Force Survey Standard Errors, Data Cube** (cat. no. 6298.0.55.001) which is available free of charge on the ABS website <<https://www.abs.gov.au>>.

**24** Non-sampling error arises from inaccuracies in collecting, recording and processing the data. Every effort is made to minimise reporting error by the careful design of questionnaires, intensive training and supervision of interviewers, and efficient data processing procedures. Non-sampling error also arises because information cannot be obtained from all persons selected in the survey. The Labour Force Survey receives a high level of co-operation from individuals in selected dwellings, with the average response rate over the last year being 97%. See Glossary for definition of response rate.

## SEASONAL ADJUSTMENT AND TREND ESTIMATION

**25** Seasonal adjustment is a means of removing the estimated effects of normal seasonal variation from the series so that the effects of other influences on the series can be more clearly recognised. Seasonal adjustment does not aim to remove the irregular or non-seasonal influences which may be present in any particular month. This means that month-to-month movements of the seasonally adjusted estimates may not be reliable indicators of trend behaviour.

**26** The Labour Force Survey uses the concurrent seasonal adjustment method to derive seasonal factors. Concurrent seasonal adjustment uses data up to the current month to estimate seasonal factors for the current and all previous months. This process can result in revisions each month to estimates for earlier periods. However, in most instances, the only noticeable revisions will be to the seasonally adjusted estimates for the previous month and one year prior to the current month.

**27** The revision properties of the seasonally adjusted and trend estimates can be improved by the use of Autoregressive Integrated Moving Average (ARIMA) modelling. ARIMA modelling relies on the characteristics of the series being analysed to project future period data. The projected values are temporary, intermediate values, that are only used internally to improve the estimation of the seasonal factors. The projected data do not affect the original estimates and are discarded at the end of the seasonal adjustment process. The Labour Force Survey uses an ARIMA model for 95% of the individual time series. The ARIMA model is assessed as part of the annual reanalysis. For further details, see the feature article in **Australian Economic Indicators, Oct 2004** (cat. no. 1350.0).

**28** Seasonal adjustment is able to remove the effect of events which occur at the same time in the survey every year. However, there are some events, like holidays, which are not always at the same time in the survey cycle or which are not at the same time across Australia. The effects of these types of events on Labour Force Survey estimates cannot in all cases be removed, because the pattern of their effects cannot be determined. However, two events which are adjusted for in the seasonally adjusted series are the January interview start date and the timing of Easter. For further details, see **Information Paper: Forthcoming Changes to Labour Force Statistics** (cat. no. 6292.0) released in December 2003.

**29** While seasonal factors for the complete time series are estimated each month, they will continue to be reviewed annually at a more detailed level to take into account each additional year's original data. This annual review will not normally result in significant changes to published estimates. The review is usually conducted in February each year with the results released in the February issue of this publication.

**30** The smoothing of seasonally adjusted series to produce 'trend' series reduces the impact of the irregular component of the seasonally adjusted series. These trend estimates are derived by applying a 13-term Henderson-weighted moving average to all months except the last six. The last six monthly trend estimates are obtained by applying surrogates of the Henderson average to the seasonally adjusted series. Trend estimates are used to analyse the underlying behaviour of a series over time.

**31** While this smoothing technique enables estimates to be produced for the latest month, it does result in revisions in addition to those caused by the revision of seasonally adjusted estimates. Generally, revisions due to the use of surrogates of the Henderson average become smaller, and after three months have a negligible impact on the series.

**32** Trend estimates are published for the Northern Territory in table 10 and for the Australian Capital Territory in table 11. Unadjusted series for the two territories have shown, historically, a high degree of variability, which can lead to considerable revisions to the seasonally adjusted estimates each month when seasonal factors are estimated. For this reason, seasonally adjusted estimates are not currently published for the two Territories. In addition, caution should be exercised in the interpretation of trend estimates for the two territories, particularly for the three most recent months, where revisions may be relatively large.

**33** For further information, see **A Guide to Interpreting Time Series - Monitoring Trends** (cat. no. 1349.0) or contact the Assistant Director, Time Series Analysis on (02) 6252 6345 or email [time.series.analysis@abs.gov.au](mailto:time.series.analysis@abs.gov.au).

## RELATED PUBLICATIONS

**34** Users may also wish to refer to **Australian Labour Market Statistics** (cat. no. 6105.0). This publication contains additional tables and a detailed list of related publications. For further information about this publication, please contact the Assistant Director, Labour Market Statistics on (02) 6252 7636.

**35** ABS Information about the labour market can be found on the Labour theme page on the ABS website <<https://www.abs.gov.au>>(Themes), or from ABS Bookshops.

**36** Information about current publications and other products released by the ABS is available from the statistics page on the ABS website. The ABS also issues a daily release advice on the website, Upcoming Product Releases which details products to be released in the week ahead.

## DATA AVAILABLE ON REQUEST

**37** As well as the statistics included in this and related publications, the ABS may have other relevant data available. Inquiries should be made to the Labour Force contact officer on (02) 6252 6525, email [labourforce@abs.gov.au](mailto:labourforce@abs.gov.au) or to any ABS office.

## EFFECTS OF ROUNDING

**38** Estimates have been rounded and discrepancies may occur between sums of the component items and totals. Estimates of movement shown in this publication are obtained by taking the difference of unrounded estimates. The movement estimate is then rounded to one decimal place. Where a discrepancy occurs between the reported movement and the difference of the rounded estimates, the reported movement will be more accurate.

## SYMBOLS AND ABBREVIATIONS

### 39 SYMBOLS AND ABBREVIATIONS

Symbol	Definition
'000	thousands
%	percentage
ABS	Australian Bureau of Statistics
CAI	computer assisted interviewing

cat. no.	catalogue number
ERP	estimated resident population
f/t	full time
LFS	Labour Force Survey
p/t	part time
pts	percentage points
Seas adj.	seasonally adjusted
TAFE	Technical and Further Education

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## Glossary

### GLOSSARY

#### Actively looking for work

Includes writing, telephoning or applying in person to an employer for work; answering an advertisement for a job; checking factory noticeboards or the touchscreens at the Centrelink offices; being registered with Centrelink as a jobseeker; checking or registering with any other employment agency; advertising or tendering for work; and contacting friends or relatives.

#### Attending full time education

Persons aged 15-24 years enrolled at secondary or high school or enrolled as a full time student at a Technical and Further Education (TAFE) college, university, or other educational institution in the reference week.

#### Attending school

Persons aged 15-19 years enrolled at secondary or high school in the reference week.

#### Attending tertiary educational institution full time

Persons aged 15-24 years enrolled full time at a TAFE college, university, or other educational institution in the reference week, except those persons aged 15-19 years who were still attending school.

#### Civilian population aged 15 years and over

All usual residents of Australia aged 15 years and over except members of the permanent defence forces, certain diplomatic personnel of overseas governments customarily excluded from census and estimated population counts, overseas residents in Australia, and members of non-Australian defence forces (and their dependants) stationed in Australia.

#### Composite Estimation

The estimation methodology used in the Labour Force Survey. Composite Estimation uses sample responses from nearby months as well as from the reference month to derive estimates for the reference month. This approach achieves gains in efficiency by exploiting

the high similarity between the responses provided by the same respondent in previous months. For details see **Information Paper: Forthcoming Changes to Labour Force Statistics, 2007** (cat. no. 6292.0).

## Employed

All persons aged 15 years and over who, during the reference week:

- worked for one hour or more for pay, profit, commission or payment in kind in a job or business, or on a farm (comprising employees, employers and own account workers); or
- worked for one hour or more without pay in a family business or on a farm (i.e. contributing family workers); or
- were employees who had a job but were not at work and were:
  - away from work for less than four weeks up to the end of the reference week; or
  - away from work for more than four weeks up to the end of the reference week and received pay for some or all of the four week period to the end of the reference week; or
  - away from work as a standard work or shift arrangement; or
  - on strike or locked out; or
  - on workers' compensation and expected to return to their job; or
- were employers or own account workers, who had a job, business or farm, but were not at work.

## Employment to population ratio

For any group, the number of employed persons expressed as a percentage of the civilian population in the same group.

## Full time workers

Employed persons who usually worked 35 hours or more a week (in all jobs) and those who, although usually working less than 35 hours a week, worked 35 hours or more during the reference week.

## Gross flows

The matching of respondents who report in consecutive months enables analysis of the transition of individuals between the different labour force status classifications, referred to as the **matched sample**. The transition counts between the different labour force status classifications from one point in time to the next are commonly referred to as **gross flows**.

The figures presented in gross flows are presented in original terms only and do not align with published labour force estimates. The gross flows figures are derived from the matched sample between consecutive months, which after taking account of the sample rotation and varying non-response in each month is approximately 80 percent of the sample.

Caution should be exercised when analysing these gross flows data due to:

- the figures presented sum to approximately 80 percent of the population values as the gross flows data are based on the matched sample only;
- there is no adjustment applied to account for changes due to seasonal patterns (referred to commonly as seasonal adjustment); and

- the relative sizes of each transition class are subject to bias due to the matched sample being a non-representative sample.

### **Labour force**

For any group, persons who were employed or unemployed, as defined.

### **Labour force status**

A classification of the civilian population aged 15 years and over into employed, unemployed or not in the labour force, as defined. The definitions conform closely to the international standard definitions adopted by the International Conferences of Labour Statisticians.

### **Labour force underutilisation rate**

The sum of the number of persons unemployed and the number of persons in underemployment, expressed as a proportion of the labour force.

### **Not in labour force**

Persons who were not in the categories employed or unemployed as defined.

### **Participation rate**

For any group, the labour force expressed as a percentage of the civilian population aged 15 years and over in the same group.

### **Part time workers**

Employed persons who usually worked less than 35 hours a week (in all jobs) and either did so during the reference week, or were not at work in the reference week.

### **Response rate**

The number of fully responding dwellings expressed as a percentage of the total number of dwellings excluding sample loss. Examples of sample loss include: dwellings where all persons are out of scope and/or coverage; vacant dwellings; dwellings under construction; dwellings converted to non-dwellings; derelict dwellings; and demolished dwellings.

### **Seasonally adjusted series**

A time series of estimates with the estimated effects of normal seasonal variation removed. See Explanatory Notes 25 to 29 for more detail.

### **Trend series**

A smoothed seasonally adjusted series of estimates. See Explanatory Notes 30 to 33 for more detail.

### **Underemployment rate**

The number of underemployed workers expressed as a percentage of the labour force.

### **Underemployed workers**



Employed persons aged 15 years and over who want, and are available for, more hours of work than they currently have. They comprise:

- persons employed part time who want to work more hours and are available to start work with more hours, either in the reference week or in the four weeks subsequent to the survey; or
- persons employed full time who worked part time hours in the reference week for economic reasons (such as being stood down or insufficient work being available). It is assumed that these people wanted to work full time in the reference week and would have been available to do so.

## **Unemployed**

Persons aged 15 years and over who were not employed during the reference week, and:

- had actively looked for full time or part time work at any time in the four weeks up to the end of the reference week and were available for work in the reference week; or
- were waiting to start a new job within four weeks from the end of the reference week and could have started in the reference week if the job had been available then.

## **Unemployed looking for full time work**

Unemployed persons who:

- actively looked for full time work; or
- were waiting to start a new full time job.

## **Unemployed looking for part time work**

Unemployed persons who:

- actively looked for part time work only; or
- were waiting to start a new part time job.

## **Unemployment rate**

For any group, the number of unemployed persons expressed as a percentage of the labour force in the same group.

## **Unemployment to population ratio**

For any group, the number of unemployed persons expressed as a percentage of the civilian population in the same group.

# **Quality Declaration - Summary**

## **QUALITY DECLARATION - SUMMARY**

## **INSTITUTIONAL ENVIRONMENT**

Labour Force statistics are compiled from the Labour Force Survey which is conducted each month throughout Australia as part of the Australian Bureau of Statistics (ABS) household survey program. For information on the institutional environment of the ABS, including the legislative obligations of the ABS, financing and governance arrangements, and mechanisms for scrutiny of ABS operations, please see ABS Institutional Environment.

## **RELEVANCE**

The Labour Force Survey provides monthly information about the labour market activity of Australia's resident civilian population aged 15 years and over. The Labour Force Survey is designed to primarily provide estimates of employment and unemployment for the whole of Australia and, secondarily, for each state and territory.

## **TIMELINESS**

The Labour Force Survey enumeration begins on the Sunday between the 5th and 11th of the month, except for the Christmas and New Year holiday period. In December enumerations starts between the 3rd and 9th (4 weeks after November enumeration begins). In January enumeration starts between the 7th and 13th (5 weeks after December enumeration begins).

Key estimates from the Labour Force Survey are published in two stages. The first, *Labour Force, Australia* (cat. no. 6202.0), is released 32 days after the commencement of enumeration for the month, with the exception of estimates for December which are published 39 days after the commencement of enumeration.

The second stage, which includes detailed data that were not part of the first stage, are published in *Labour Force, Australia, Detailed - Electronic Delivery* (cat. no. 6291.0.55.001) and *Labour Force, Australia, Detailed, Quarterly* (cat. no. 6291.0.55.003). The second stage is released 7 days after the first stage.

## **ACCURACY**

The Labour Force Survey is based on a sample of private dwellings (approximately 22,800 houses, flats etc) and non-private dwellings, such as hotels and motels. The sample covers about 0.24% of the Australian Population. The Labour Force Survey is designed primarily to provide estimates of key labour force statistics for the whole of Australia and, secondarily, for each state and territory.

Two types of error are possible in an estimate based on a sample survey: non-sampling error and sampling error.

Non-sampling error arises from inaccuracies in collecting, recording and processing the data. Every effort is made to minimise reporting error by the careful design of questionnaires, intensive training and supervision of interviewers, and efficient data processing procedures. Non-sampling error also arises because information cannot be obtained from all persons selected in the survey. The Labour Force Survey receives a high level of cooperation, with an average response rate for the last year being 97%.

Sampling error occurs because a sample, rather than the entire population, is surveyed. One measure of the likely difference resulting from not including all dwellings in the survey is given by the standard error. There are about two chances in three that a sample estimate will differ by less than one standard error from the figure that would have been obtained if all dwellings had been included in the survey, and about nineteen chances in twenty that the difference will be less than two standard errors.

Standard errors of key estimates and movements since the previous month are available in *Labour Force, Australia* (cat. no. 6202.0). The standard error of other estimates and movements may be calculated by using the spreadsheet contained in *Labour Force Survey Standard Errors, Data Cube* (cat. no. 6298.0.55.001).

## **COHERENCE**

The ABS has been conducting the Labour Force Survey each month since February 1978. While seeking to provide a high degree of consistency and comparability over time by minimising changes to the survey, sound survey practice requires careful and continuing maintenance and development to maintain the integrity of the data and the efficiency of the collection.

The changes which have been made to the Labour Force Survey have included changes in sampling methods, estimation methods, concepts, data item definitions, classifications, and time series analysis techniques. In introducing these changes the ABS has generally revised previous estimates to ensure consistency and coherence with current estimates. For a full list of changes made to the Labour Force Survey see Chapter 20 in *Labour Statistics: Concepts, Sources and Methods* (cat. no. 6102.0.55.001).

## **INTERPRETABILITY**

The key estimates from the Labour Force Survey are available as original, seasonally adjusted and trend series. Seasonal adjustment is a means of removing the effects of normal seasonal variation from the series so other influences on the series can be more clearly recognised. Seasonal adjustment does not aim to remove the irregular influences which may be present and therefore month-to-month movements may not be reliable indicators of underlying behaviour. To assist in interpreting the underlying behaviour, the ABS produces the trend series by smoothing the seasonally adjusted series to reduce the impact of the irregular component. For further information, see *A Guide to Interpreting Time Series - Monitoring Trends* (cat. no. 1349.0).

Further information on the terminology and other technical aspects associated with statistics from the Labour Force Survey can be found in the publication *Labour Force, Australia* (cat. no. 6202.0), which contains detailed Explanatory Notes, Standard Error information and a Glossary.

## **ACCESSIBILITY**

Please see the Related Information tab for the list of products that are available from this collection.

# What If

## WHAT IF...? REVISIONS TO TREND ESTIMATES

### EFFECT OF NEW SEASONALLY ADJUSTED ESTIMATES ON TREND ESTIMATES

#### TREND REVISIONS

Each time new seasonally adjusted estimates become available, trend estimates are revised. This revision is a combined result of the concurrent seasonal adjustment process and the application of surrogates of the Henderson average to the seasonally adjusted series (see paragraphs 25 to 33 of the Explanatory Notes).

The examples in the tables below show two illustrative scenarios and the consequent revisions to previous trend estimates of employment and the unemployment rate. The revisions in the scenarios are due to the use of surrogates of the Henderson average, as the impact of revision of seasonally adjusted estimates can not be estimated in advance.

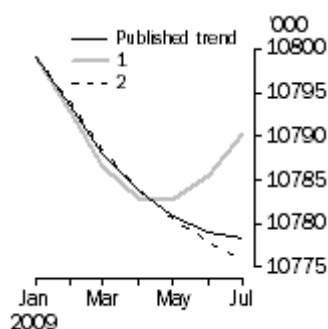
**1** The August seasonally adjusted estimate is **higher** than the July estimate by:  
0.24% for employment  
2.10% for the unemployment rate

**2** The August seasonally adjusted estimate is **lower** than the July estimate by:  
0.24% for employment  
2.10% for the unemployment rate

The percentage changes of 0.24% and 2.10% represent the average absolute monthly percentage changes in employment and the unemployment rate respectively.

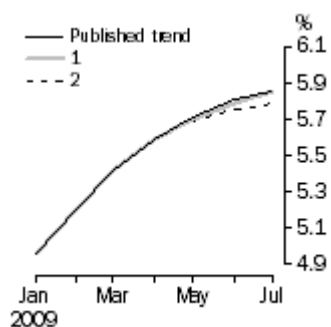
Estimates in the graphs have been calculated using unrounded estimates, and may be different from, but more accurate than, rounded estimates depicted in its corresponding table.

#### Employment



WHAT IF NEXT MONTH'S SEASONALLY ADJUSTED ESTIMATE IS:			
	Trend as published	(1) 10 796.1 i.e. rises by 0.24%	(2) 10 774.3 i.e. falls by 0.24%
2009			
April	10 783.8	10 783.0	10 783.9
May	10 780.9	10 782.8	10 780.5
June	10 779.1	10 785.6	10 777.9
July	10 778.3	10 790.2	10 775.8

#### Unemployment Rate



#### WHAT IF NEXT MONTH'S SEASONALLY ADJUSTED ESTIMATE IS:

	Trend as published	(1) 5.9 i.e. rises by 2.10%	(2) 5.8 i.e. falls by 2.10%
2009			
April	5.6	5.6	5.6
May	5.7	5.7	5.7
June	5.8	5.8	5.8
July	5.9	5.9	5.8

## Standard Errors

### STANDARD ERRORS

#### STANDARD ERRORS

The estimates in this publication are based on information gained from the occupants of a sample survey of dwellings. Because the entire population is not surveyed, the published estimates are subject to sampling error. The most common way of quantifying such sampling error is to calculate the standard error for the published estimate or statistic. For more information, see paragraph 23 of the Explanatory Notes.

#### LEVEL ESTIMATES

To illustrate, let us say the published level estimate for employed persons aged 15-19 years is 700,000 and the associated standard error is 8,300. The standard error is then used to interpret the level estimate of 700,000. For instance, the standard error of 8,300 indicates that:

- There are approximately two chances in three that the real value falls within the range 691,700 to 708,300 ( $700,000 \pm 8,300$ )
- There are approximately nineteen chances in twenty that the real value falls within the range 683,400 to 716,600 ( $700,000 \pm 16,600$ ).

The real value in this case is the result we would obtain if we could enumerate the total population.

The following table shows the standard errors for this month's level estimates.

AUSTRALIA												
NSW Vic. Qld SA WA Tas. NT ACT Males Females Persons												
Aged 15 years and over												
Employed												
Full time	'000	23.3	23.2	17.4	7.6	11.0	3.1	4.3	2.7	30.2	21.7	36.8
Part time	'000	16.2	14.5	11.2	5.6	7.8	2.3	1.3	1.7	12.4	19.5	24.0

Total	'000	25.7	28.2	19.8	8.8	12.2	3.7	5.1	2.8	32.9	30.3	41.8
Unemployed												
Looking for f/t work	'000	10.0	7.9	7.0	3.1	4.4	1.0	0.7	0.9	11.8	8.9	15.0
Looking for p/t work	'000	5.3	5.0	3.5	1.6	2.5	0.6	0.4	0.6	5.3	6.5	8.4
Total	'000	11.4	9.5	7.8	3.5	5.1	1.2	0.9	1.1	13.0	11.1	17.3
Labour force	'000	26.0	29.0	20.2	9.0	12.4	3.7	5.3	2.9	33.8	31.0	42.5
Not in labour force	'000	24.1	26.6	17.4	8.1	11.8	3.6	3.9	2.6	27.7	33.0	39.0
Unemployment rate												
Looking for f/t work	pts	0.4	0.4	0.4	0.6	0.5	0.6	0.6	0.6	0.2	0.3	0.2
Looking for p/t work	pts	0.5	0.6	0.5	0.6	0.7	0.7	1.8	1.2	0.5	0.3	0.2
Total	pts	0.3	0.3	0.3	0.4	0.4	0.5	0.7	0.5	0.2	0.2	0.2
Participation rate	pts	0.5	0.7	0.6	0.7	0.7	0.9	3.2	1.0	0.4	0.3	0.2
Aged 15-19 years												
Employed												
Full time	'000	4.0	2.9	3.0	1.4	2.0	0.6	0.4	0.5	5.1	4.3	6.2
Part time	'000	5.1	4.4	4.3	1.9	2.5	0.8	0.4	0.7	6.0	6.7	8.7
Total	'000	6.2	5.1	5.2	2.3	3.2	0.9	0.5	0.8	7.5	7.6	10.4
Unemployed												
Looking for f/t work	'000	3.7	3.0	3.1	0.7	1.4	0.4	0.3	-	4.3	3.6	5.7
Looking for p/t work	'000	3.3	2.9	2.0	0.9	1.3	0.4	0.3	0.4	3.7	3.5	5.1
Total	'000	5.0	4.3	3.8	1.1	1.9	0.5	0.4	0.4	5.7	5.0	7.7
Labour force	'000	6.9	5.7	5.7	2.4	3.4	1.0	0.6	0.9	8.1	8.1	11.3
Not in labour force	'000	9.6	7.9	5.9	2.9	4.2	1.2	0.9	1.0	9.9	9.4	14.0
Unemployment rate												
Looking for f/t work	pts	3.8	5.2	4.1	3.4	4.2	5.5	6.4	-	2.4	3.1	1.9
Looking for p/t work	pts	2.1	2.3	1.6	2.2	2.3	3.5	6.8	3.8	1.6	1.2	1.0
Total	pts	2.0	2.3	1.9	1.9	2.1	3.0	4.6	2.8	1.4	1.2	0.9
Participation rate	pts	1.4	1.6	1.8	2.2	2.2	2.9	3.9	3.6	1.1	1.1	0.8
Unemployment to population ratio - looking for f/t work	pts	0.8	0.8	1.0	0.6	0.9	1.0	1.8	-	0.6	0.5	0.4

- nil or rounded to zero (including null cells)

## MOVEMENT ESTIMATES

The following example illustrates how to use the standard error to interpret a movement estimate. Let us say that one month the published level estimate for females employed part-time in Australia is 1,890,000; the next month the published level estimate is 1,900,000 and the associated standard error for the movement estimate is 9,500. The standard error is then used to interpret the published movement estimate of 10,000. For instance, the standard error of 9,500 indicates that:

- There are approximately two chances in three that the real movement between the two months falls within the range 500 to 19,500 (10,000 + or - 9,500)
- There are approximately nineteen chances in twenty that the real movement falls within the range -9,000 to 29,000 (10,000 + or - 19,000).

The following table shows the standard errors for this month's movement estimates.

AUSTRALIA												
NSW Vic. Qld SA WA Tas. NT ACT Males Females Persons												
Aged 15 years and over												
Employed												
Full time	'000	15.6	12.4	11.2	4.3	6.9	2.0	1.5	1.9	19.6	14.4	24.9
Part time	'000	10.0	8.3	6.8	3.1	4.6	1.4	0.7	1.1	8.8	13.2	15.8
Total	'000	18.7	15.1	14.8	6.1	8.7	2.4	1.6	2.1	21.6	19.7	30.3
Unemployed												
Looking for f/t work	'000	10.7	8.4	7.9	3.0	4.6	1.1	0.6	1.0	12.7	9.6	16.1

	Looking for p/t work	'000	5.9	4.9	3.7	1.7	2.6	0.6	0.4	0.9	5.4	6.8	8.7
	Total	'000	12.4	9.6	8.8	3.4	5.2	1.3	0.7	1.2	13.8	11.9	18.5
Labour force		'000	19.3	15.5	15.6	6.4	9.1	2.5	1.6	2.2	22.3	20.2	31.3
Not in labour force		'000	17.6	14.5	13.3	5.8	7.9	2.4	1.3	2.2	17.1	21.5	28.4
Unemployment rate													
	Looking for f/t work	pts	0.4	0.4	0.4	0.6	0.5	0.7	0.7	0.6	0.2	0.3	0.2
	Looking for p/t work	pts	0.6	0.6	0.6	0.7	0.7	0.8	1.7	1.5	0.5	0.3	0.3
	Total	pts	0.3	0.4	0.3	0.4	0.4	0.5	0.7	0.6	0.2	0.2	0.2
Participation rate		pts	0.3	0.4	0.4	0.5	0.5	0.6	1.0	0.8	0.3	0.2	0.2
Aged 15-19 years													
Employed													
	Full time	'000	3.1	2.2	2.5	1.0	1.6	0.5	0.3	0.4	4.0	3.4	4.8
	Part time	'000	4.1	3.4	3.3	1.4	2.1	0.6	0.3	0.6	4.7	5.2	6.5
	Total	'000	4.8	3.8	3.9	1.7	2.5	0.7	0.4	0.6	5.7	5.7	7.6
Unemployed													
	Looking for f/t work	'000	4.1	3.1	3.3	1.2	1.6	0.5	0.2	0.3	4.5	4.0	6.1
	Looking for p/t work	'000	3.6	3.0	2.4	1.1	1.4	0.4	0.3	0.5	3.8	4.2	5.5
	Total	'000	5.6	4.3	4.0	1.6	2.0	0.7	0.4	0.6	5.9	5.8	8.2
Labour force		'000	5.2	4.1	4.1	1.7	2.6	0.7	0.4	0.7	6.1	6.1	8.2
Not in labour force		'000	6.0	4.9	4.0	1.9	2.7	0.8	0.6	0.7	6.9	6.7	9.2
Unemployment rate													
	Looking for f/t work	pts	4.4	5.9	4.1	5.1	4.6	6.4	6.4	6.7	2.6	3.6	2.1
	Looking for p/t work	pts	2.3	2.3	1.8	2.6	2.3	4.1	6.4	4.3	1.6	1.3	1.0
	Total	pts	2.2	2.4	2.0	2.5	2.2	3.5	4.6	3.4	1.4	1.4	1.0
Participation rate		pts	1.1	1.2	1.3	1.6	1.7	2.1	2.7	2.9	0.8	0.9	0.6
Unemployment to population ratio - looking for f/t work		pts	0.9	0.9	1.1	1.1	1.0	1.4	1.5	1.1	0.6	0.6	0.4

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